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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/628,128	07/25/2003	Lian-Ao Wu	11090-013-999	3091
20583	7590	02/04/2005	EXAMINER	
JONES DAY 222 EAST 41ST ST NEW YORK, NY 10017			WILLE, DOUGLAS A	
			ART UNIT	PAPER NUMBER
			2814	

DATE MAILED: 02/04/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

(4)

<b>Office Action Summary</b>	<b>Application No.</b> 10/628,128	<b>Applicant(s)</b> WU ET AL.	
	<b>Examiner</b> Douglas A. Wille	<b>Art Unit</b> 2814	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1) ☒ Responsive to communication(s) filed on 29 September 2004.

2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4) ☒ Claim(s) 1-54 is/are pending in the application.

    4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.

5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.

6) ☒ Claim(s) 1-54 is/are rejected.

7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.

8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

9) ☐ The specification is objected to by the Examiner.

10) ☒ The drawing(s) filed on 25 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) ☐ All    b) ☐ Some \* c) ☐ None of:

1. ☐ Certified copies of the priority documents have been received.

2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.

3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) <input type="checkbox"/> Notice of References Cited (PTO-892)	4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)
3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date <u>0904</u> .	6) <input type="checkbox"/> Other: _____

U.S. Patent and Trademark Office  
PTOL-326 (Rev. 1-04)

Office Action Summary

Part of Paper No./Mail Date 0105

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1 – 5, 14, 22 – 31 and 49 are rejected under 35 U.S.C. 102(b) as being anticipated by Bennett et al. (see IDS).

3. With respect to claims 1 – 5, 22 – 25 the process is shown by Bennett et al. as teleportation.

4. With respect to claim 14, this measurement is included.

5. With respect to claims 26 - 31, it is understood that the corrections will be applied as necessary.

6. With respect to claim 49, an EPR pair is shown.

### ***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 7, 15 - 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bennett et al.

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9. With respect to claims 7 and 15 - 17, it would be obvious to apply any operation for a time longer than that shown by the Heisenberg inequality to avoid a loss of information and since criticality has not been established, any time commensurate time period would be obvious.

10. Claims 8 - 12, 18 - 21, 32 - 34, 42 and 44 - 48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bennett et al. in view of Blatter et al.

11. With respect to claims 8, 9, 44 - 48, Bennett et al. shows EPR spin systems while Blatter et al show that qubits can be superconducting. It would be obvious to use the Blatter et al. qubits instead of the Bennett et al. qubits since the superconducting qubits have a practical embodiment and the spin qubits do not.

12. With respect to claim 10, Blatter et al. show d-wave materials (see abstract).

13. With respect to claim 11, Blatter et al. show a permanent readout qubit.

14. With respect to claim 12, Blatter et al. show both charge and phase qubits.

15. With respect to claims 18 - 21, Blatter et al. shows various gates and their use would be obvious.

16. With respect to claims 32 - 34 and 42 entangled states are shown and the general entangled state will have a variety of coefficients and would be obvious.

17. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bennett et al. in view of Blatter et al. and further in view of Shnirman et al. (see IDS).

18. With respect to claim 13, Shnirman et al. show that quantum measurements can be performed with interconnected SSETs and provide an alternative to the Blatter et al. approach and the use would be obvious since superconducting weak links are not needed which would simplify fabrication.

***Claim Rejections - 35 USC § 112***

19. Claims 6, 13, 14, 18, 19, 20 and 22 – 54 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
20. The specification fails to provide a description of how a Z gate, a XX gate, a X gate or a Y gate are implemented and it is not understood if or how such could be implemented. Similarly for applying a Josephson gate between data and ancilla qubits.
21. With respect to claims 22 – 54, it is not shown in the specification how the second ancilla is created or applied.
22. With respect to claims 50 and 51, what are the types?
23. With respect to claim 53, universal gates are not defined.
24. With respect to claim 54, the process that is inherent is not described in such a way as to permit its use.

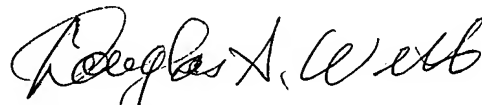
***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Douglas A. Wille whose telephone number is (571) 272-1721. The examiner can normally be reached on M-F (6:15-2:45).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael Fahmy can be reached on (571) 272-1705. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read "Douglas A. Wille". The signature is fluid and cursive, with the first name "Douglas" being more prominent.

Douglas A. Wille  
Primary Examiner